PETROLEUM-BASED SOLVENTS

HAZARDS & RULES

Base Materials - Hazards and Impacts

Petroleum-based solvents (naphtha or mineral spirits) are widely used in solvent sinks to remove soils and oily residues from automotive parts. Petroleum-based solvents with a flash point between 100 and 140˚ F are ignitable. These solvents won't normally ignite, but may do so if they are heated and/or exposed to an open flame or electrical spark.

In addition to being ignitable, some types of petroleum-based solvents may irritate the eyes and skin and can affect the central nervous system if inhaled or absorbed through the skin. Petroleum-based solvents contain volatile organic compounds (VOCs), which contribute to the formation of ozone, a toxic component of urban smog and a contributor to lung damage in children, asthma sufferers and the elderly.

Additives and Contaminants

Many shops use supplemental cleaning products to pretreat carbon deposits and other heavy soils. These cleaning products typically contain ignitable and/or chlorinated solvents such as methanol, propane, xylene, methylene chloride, trichloroethane and/or tetrachloroethylene. The use of these products may cause your used solvent to be a hazardous waste due to toxicity as well as ignitability.

In addition to precleaners, used solvent may be contaminated with lead and/or chromium, which are frequently used as coatings on metal parts. A thin layer of these coatings may wash off when the parts are cleaned, leaving heavy metals in the used solvent.

Regulatory Overview

Under IDEM's air regulations, all shops that use petroleum-based solvents in an immersion cleaning machine (solvent sink) or in a remote reservoir cleaning machine (part sprayer), must follow specific work practices to limit the amount of volatile organic compounds (VOCs) entering the air. These work practices are listed in the "You Must" section that follows.

As of March 15, 1999, shops that wish to use petroleum-based solvents and are located in Clark, Floyd, Lake, and Porter counties will be required to use only low vapor pressure petroleum-based solvents. Additional vapor pressure limitations will be required as of March 15, 2001 for shops using petroleum-based solvents in these four counties. At the time of publishing of this manual, these new regulations were not yet finalized. If you are located in one of the above listed counties and use petroleum-based solvents, contact CTAP for additional compliance information.

Under IDEM's hazardous waste rules, used petroleum-based solvent with a flash point below 140˚ F is hazardous waste due to ignitability. The term "flash point" refers to the temperature

at which a material could ignite if exposed to a spark. Used petroleum-based solvents with a flash point above 140˚ F are not regulated as a hazardous waste due to ignitability, but may be a hazardous waste due to toxicity depending upon the level and type of contamination.

Note that, if your shop is classified as a CESQG, disposing of more than 30 gallons of hazardous waste in any one calendar month will change your hazardous waste generator status classification from CESQG to SQG. If your used petroleum-based solvent is determined to be a hazardous waste, you may easily move into the SQG classification when you change out your parts washer. Parts washers typically contain between 19 and 27 gallons of used solvent, making the amount of hazardous waste very near the 220 pound per month threshold for SQGs.

MANAGEMENT RESPONSIBILITIES

Listed below are the management options that you must follow. Also listed are suggested practices that you should follow in order to ease your regulatory requirements and improve the environmental health of your shop.

You Must:

- not use gasoline as a solvent. [OSHA]
- if your solvent has a flash point less than 110° F, you must use the solvent in a special closed machine approved for parts washing. A machine of this type must be Universal Laboratories (UL) approved for flammable substances and equipped with a wire (to hold the lid open) and a fusible link, which will automatically close the unit in the event of a fire. [Department of Fire & Building Services]
- not use liquids with a flash point less than 110° F for cleaning floors or walls. [Department of Fire & Building Services]
- ensure that the connections on all drums are sufficiently tight that they do not allow vapor or liquid to escape. [OSHA]
- clean up all spills of petroleum-based solvents promptly. [OSHA]
- if you use petroleum-based solvents in immersion cleaning machines (solvent sinks) or in a remote reservoir cleaning machine (part sprayer), you must:
  - keep your solvent tank covered when not in use to prevent evaporation.
  - place a drain shelf in the basin of the parts washer. This shelf allows solvent to drain back into the solvent tank.
  - drain all parts for at least fifteen (15) seconds or until part is no longer dripping.
  - store used solvent to be disposed in tightly covered or closed containers.

- ensure that a permanent label summarizing the above work practices is affixed to the inside cover so it is readily visible to employees using the machine. If your machine does not come with a label, contact the manufacturer or your solvent supplier to obtain one.

! if you are located in Lake, Porter, Clark or Floyd counties, you must comply with the material requirements for cold cleaning degreasers. This regulation becomes effective as of March 15, 1999 and imposes additional restrictions beginning March 15, 2001. At the time of printing of this manual, the regulations were not yet finalized. Contact CTAP or IDEM's Office of Air Management for more information.

! make a hazardous waste determination on your used petroleum-based solvent and manage it accordingly (see Chapter 3 for more information.) Note that your used solvent will be a hazardous waste because it is ignitable. It may also be a toxic hazardous waste depending upon the contaminants in the used solvent.

You Should:

! store new petroleum-based solvent in sealed containers until ready for use.

! preclean parts using a cleaning process that does not involve hazardous solvents, such as manually cleaning the part with a wire brush.

! reduce the amount of solvent used by replacing solvent only when necessary. The shop employees who regularly use the solvent should be able to tell when the solvent begins to lose its effectiveness and needs to be changed. Test kits are available to help you make this determination.

! if you use two solvent tanks, skip having one of the tanks serviced while replacing solvent for the other washer as ususal. Designate the parts washer with contaminated solvents for precleaning dirty parts and reserve the parts washer with new solvent for final cleaning. If your shop is a CESQG, having only one of your tanks serviced may have the added benefit of keeping your shop in the CESQG classification. Your shop may also need to limit the amount of hazardous wastes generated from other sources in order to remain below the 220 pound threshold.

! keep solvent and other wastes separated so that they can be recycled or properly disposed (adding a waste to a hazardous waste will increase the amount of hazardous waste that you generate).

You Should Consider:

! purchasing or leasing a solvent sink with a filter unit that will extend the life of your solvent by filtering out contaminants.

! using non-hazardous cleaning methods, such as an aqueous parts washers.

BACKGROUND ON OPTIONS TO CONSIDER

Purchasing or Leasing a Solvent Sink With a Filter Unit

Some of the newer solvent sinks have filter units that extend the life of the solvent by filtering out contaminants. Dirty solvent passes through the filtering unit where contaminants are removed, and clean solvent is returned to the reservoir for reuse.

The type and location of the filters on the solvent sink vary depending upon the type of filtration system used. Some of the more commonly employed filtration systems are:

- side-mounted disposable fabric filter units, which removes primarily particulate;
- cyclonic filter units that use centrifugal force "cyclonic action" to remove solids. The solvent passes through a filtering unit where a spinning action takes place, causing the solids to settle out and allowing the clean solvent to be reused.
- clay-containing filter units that are placed in the solvent reservoir or in the wash basin to remove primarily oil and grease.

Remember that a hazardous waste determination must be performed on the used filters prior to disposal.

Using Non-Hazardous Cleaning Methods, Such as Aqueous Parts Washers

For information on aqueous-based parts washing solutions, see the Aqueous Cleaners section in Chapter 5.